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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/594,267	09/26/2006	Takashi Shimizu	0234-0522PUS1	1855

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EXAMINER
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CAPOZZI, CHARLES

ART UNIT	PAPER NUMBER
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1716

NOTIFICATION DATE	DELIVERY MODE
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08/11/2010

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/594,267	<b>Applicant(s)</b> SHIMIZU, TAKASHI	
	<b>Examiner</b> Charles J. Capozzi	<b>Art Unit</b> 1716	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) 1-4 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) 5-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 September 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>4/29/2010</u> . | 6) <input type="checkbox"/> Other: ____.  |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 112***

1. Applicant's amendment to claims 5 and 6, filed 5/26/2010, have been fully considered. The objection has been withdrawn.

### ***Drawings***

2. The drawings are objected to because the "back-pressure valve" recited in **claim 9** is not properly labeled in **Figure 1** or in the Specification (Page 17, line 2).

3. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

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***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. **Claims 5-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Worm (US 2003/0047202) in further view of Hughes et al (Organometallics), Grebe et al (USP 4,060,394), and Hukvari et al (USP 4,882,128).**

6. The embodiment of Figure 3 is being used for this rejection. Figure 1 and Figure 2 are referenced because they show all of the parts.

7. Regarding claims 5 and 6, Worm teaches an apparatus, comprising:

a sealable raw-material vessel (supply S1) containing at least one organic material ([0081, 0082], see for example Fig. 3);

a high-pressure vessel (conditioning unit C1, [0101], see for example Fig. 3), in which a supercritical fluid is capable of being stored, wherein the pressurized solution

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comprises a supercritical fluid and a solution from the sealable raw-material vessel (supply S1);

a pump mechanism (fluid transfer device P3, [0101], see for example Fig. 3) for pressure-sending and introducing the pressurized solution from the raw-material vessel (supply S1) into the supercritical-fluid storing high-pressure vessel (conditioning unit C1); and

a supercritical reaction tank (pressure chamber 410) wherein a supercritical reaction of a solution containing at least one organometallic compound dissolved in a fluorinated compound is *capable of* occurring, so as a product is *capable of* being formed on a substrate (wafer 5, [0076], see for example Fig. 1).

8. Recitation of “so as to form a coating of a film of a reaction metallic product by supercritical reaction” or “to make metallic solid fine particles of a reaction product by supercritical reaction” is considered an intended use of the apparatus and does not structurally limit the apparatus as claimed in claims 5 and 6.

9. Note it has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. Ex parte Masham, 2 USPQ 2d 1647 (1987). “[A]pparatus claims cover what a device is, not what a device does.” Hewlett-Packard Co. v. Bausch & Lomb Inc., 909 F.2d 1464, 1469, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990).

10. Therefore, the apparatus of Worm is capable of serving as a “supercritical reacting apparatus” since Worm teaches an interconnected raw-material vessel,

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supercritical-fluid storing high-pressure vessel, a pump mechanism, and reaction tank as claimed in claims 5 and 6.

11. Worm does not *explicitly* teach a “chemistry” (see para 0081, 0082) that includes a solution of an organometallic compound dissolved in a fluorinated compound.

12. However, Hughes teaches a solution of an organometallic compound dissolved in a fluorinated compound, that may be used for the benefit of increasing solubility in supercritical carbon dioxide (Page 287, left column, first paragraph; Page 287, right column, second paragraph; see Conclusions).

13. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to include the teachings of Hughes with the “chemistries” taught by Worm for the benefit of increasing solubility in supercritical carbon dioxide.

14. Although Worm teaches seals for sealing pressure chambers (see para 0191), Worm does not *explicitly* teach a *polytetrafluoroethylene O-ring* used to seal a raw material vessel (supply S1) or a supercritical-fluid storing high-pressure vessel (conditioning unit 1).

8. However, in the same field of endeavor, Grebe and Muraoka teach that polytetrafluoroethylene O-rings are well known in the art for the benefit of sealing vessels (see Hukvari, col. 4, lines 34-48; and see Grebe, col. 3, lines 22-34).

9. The simple substitution of one known element for another is likely to be obvious when predictable results are achieved. See *KSR International Co. v. Teleflex Inc.*, 550 U.S. \_\_\_, \_\_\_, 82 USPQ2d 1385, 1395 – 97 (2007) (see MPEP § 2143, B.).

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10. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use polytetrafluoroethylene O-rings with the apparatus of Worm for the benefit of sealing vessels.

11. Regarding claim 7, Worm teaches a supercritical fluid may be supercritical carbon dioxide [0097].

12. Regarding claim 8, Worm teaches a locally heating device (heater assembly 460; para 0182) for a substrate (wafer 5) (see for example Fig. 8).

13. Regarding claim 9, Worm teaches a supercritical reaction tank (pressure chamber 410) that comprises a back-pressure valve (valve V6; para 0093; see for example Fig. 1) for controlling the pressure of the supercritical reaction tank (pressure chamber 410), which is *capable of* creating a supersaturated state.

14. Recitation of "that creates a supersaturated state for the metallic solid fine particles produced by the supercritical reaction" is considered an intended use of the back-pressure valve and does not further structurally limit the apparatus as claimed in claim 9.

### ***Response to Arguments***

15. Applicant's arguments with respect to claims 5 and 6 have been considered but are moot in view of the new ground(s) of rejection.

16. Applicant argues on Page 8 of Remarks that Worm does not teach or suggest the apparatus as claimed, as amended.

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17. It is noted that claims 5 and 6 have been amended to narrow the scope of an "organic raw material" to an "organometallic compound" dissolved in a fluorinated compound.

18. Worm does not *explicitly* teach a "chemistry" (see para 0081, 0082) that includes a solution of an organometallic compound dissolved in a fluorinated compound.

19. Therefore, Hughes has been introduced, which teaches a solution of an organometallic compound dissolved in a fluorinated compound, that may be used for the benefit of increasing solubility in supercritical carbon dioxide (Page 287, left column, first paragraph; Page 287, right column, second paragraph; see Conclusions).

20. Thus, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to include the teachings of Hughes with the "chemistries" taught by Worm for the benefit of increasing solubility in supercritical carbon dioxide.

21. Applicant argues on Pages 8-9 of Remarks that Worm does not teach or suggest a "supercritical reacting apparatus", the formation of a coating of a film, or the formation of metallic solid fine particles.

22. However, it has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. Ex parte Masham, 2 USPQ 2d 1647 (1987). "[A]pparatus claims cover what a device is, not what a device does." Hewlett-Packard Co. v. Bausch & Lomb Inc., 909 F.2d 1464, 1469, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990).



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23. Therefore, the apparatus of Worm is capable of serving as a "supercritical reacting apparatus" since Worm teaches an interconnected raw-material vessel, supercritical-fluid storing high-pressure vessel, a pump mechanism, and reaction tank as claimed in claims 5 and 6.

24. Further, recitation of "so as to form a coating of a film of a reaction metallic product by supercritical reaction" or "to make metallic solid fine particles of a reaction product by supercritical reaction" is considered an intended use of the apparatus and does not structurally limit the apparatus as claimed.

### ***Conclusion***

25. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Perrut (US 2003/0031784) and Muraoka et al (US 2004/0031441) disclose supercritical treatment apparatuses that are capable of reacting an organic raw material in a supercritical condition inside a high-pressure vessel or a reaction tank to form a coating of a reaction product on a substrate or to make solid fine particles of a reaction product.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

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mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Charles J. Capozzi whose telephone number is (571) 270-3638. The examiner can normally be reached on M-F, 8:30am-5:00pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571-272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Charles J. Capozzi/  
Examiner, Art Unit 1716

/Parviz Hassanzadeh/  
Supervisory Patent Examiner, Art Unit 1716

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